



Section C

301/C

A method to determine the incidence of decomposing in the traditional rock and wall paintings of Sri Lanka

T D N Perera

Department of Architecture, University of Moratuwa, Moratuwa

Research in painting conservation needs accurate, efficient and non-destructive methods to determine the rate of composite decomposing actions without disturbing the painting. Decomposing results in a change of visual characteristics that can be directly measured. In this study, attention was focused on assessing whether the measurements of such characteristics identify the rate of decomposition to an acceptable accuracy. Samples that simulate the traditional Sri Lankan rock and wall paintings, made by several techniques, were used for the study. Two categories of painting samples were considered, namely the samples with clay ground and organic paint and samples with lime based ground and mineral paint. These were subjected to destructive interventions in order to accelerate the decomposing processes and generate defects within a short period of time. Continuous heating up to 60 °C, alternative cooling and heating, introducing moisture at a rate of 3 mL per 24 hours per sample, introducing 0.1 M NaCl and MgSO₄ solutions and inducing mechanical stresses at 100 Pa and 1000 Pa for clay and lime based samples are among the destructive interventions used. Four (04) indirect parameters were used to measure the rate of decomposing of samples. Testing in the wind tunnel and the actions of moisture, temperature and illumination were these parameters. One sample of a painting was kept in open air and another one was subjected to testing. Measurement of the changes in color and visual defects tested the rate of decomposition. The Mach and Reynolds numbers used in the wind tunnel testing were 1.25 and 5x10⁶. The amount of moisture, temperature and illumination used for the purpose were 5 mL, 30 °C and 200 lx respectively. The Pearson product-moment correlation coefficients for variations measured were 0.86 and 0.94 respectively and the results proved the existence of a relationship between the parameters.

Keywords: Rock and wall paintings, decomposition, painting conservation

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